PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Kiyotaka IWATA

Serial No.: 09/614,849

Filed: July 12, 2000

For: SELF-LOCKING BOLT

Attorney Docket No.: U 012852-3

Group No.: 3677

Examiner: J. Schiffman

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

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In response to Patent Office
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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AFFIDAVIT/DECLARATION TRAVERSING GROUNDS OF REJECTION

I, Kiyoshi MORII, a Japanese citizen residing at No. 203, Yuro Hights Yashio, 751-1, Kisone, Yashio-Shi, Saitama-Ken, Japan, declare:

That I graduated from Tokai University with a degree of Master of Applied Science and Engineering in March 1997.

That I have been employed by IWATA BOLT KABUSHIKI KAISHA since April 1997 and have held and now hold the position of Researcher in the Technical Research Section since April 1997.

That I am interested in the above application as an employee of the assignee, etc.

That I have read and understood the specification of the above application.

I declare that the argument attached is true to the best of my knowledge and belief.

That all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: October 25, 2004

Declarant: Kiyoshi Morii

Kiyoshi MORII

(1) It is generally said that three or four pitches are needed to attain sufficient fastening of members by using a screw.

As is well known, the larger the diameter of the screw is, the longer the pitch of the screw is.

(2) In the case that a bolt is used without a nut, the larger the diameter of the bolt is, the thicker the member to be fastened needs to be.

In this case, the weight of the member to be fastened becomes large, requiring a high material cost to fasten the member.

(3) When the thickness of the member to be fastened is small or limited and three or four pitches cannot be secured in the member to be fastened, it becomes necessary to use a nut in order to secure three or four pitches for fastening.

However, if the diameter of the bolt is small, sufficient fastening can be attained without using a nut even though the member to be fastened is thin, because its pitch is short and three or four pitches can be secured directly in the member to be fastened.

This nut-less fastening reduces the cost because both fastening and locking the nut are unnecessary.

(4) In claim 18, it is claimed that the diameter is not larger than 6 mm.

In the case of M6 (diameter 6mm), it becomes possible to secure three or four pitches in the member to be fastened by forming a burning portion in the plane plate. Here, the burning portion has a downing part which is deformed downwardly from the plane surface as shown below. By using the downing part, three or four pitches can be formed in the member to be fastened even if it is thin.

From the practical view point, it can be said that the M6 bolt is the largest diameter bolt which enables fastening without using a nut, because it is not practical to form the burning portion for the bolt larger than M6.

(5) It can be said that the effectiveness of locking depends on the amount of the meat which is chipped and bulged from the member to be fastened and formed in the locking recess.

It is not necessarily true that the larger the diameter of the bolt is, the more meat is formed in the locking recess.

Therefore, it can be said that the effectiveness of locking is relatively

reduced for the case of the larger diameter bolt in spite of its larger diameter.

As a result, it can be said that the locking effect due to the locking recess is more effective when the diameter of the bolt is smaller.

(6) When a bolt is used together with a nut, it becomes necessary to prevent loosening between the nut and the member to be fastened even though the loosening is prevented between the bolt and the member to be fastened.

Therefore, it can be said that the bolt is effective because of its small diameter when it is used without using a nut like in the present invention.

Figure